



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: TX1561

Title: Assessing Water Quality Impacts of Nutrient Imports into an Urban Gradient

Focus Categories: Water Quality, None

Keywords: sod, residential development, manure P, urban gradient, Phosphorus imports

Start Date: 09/01/2001

End Date: 08/31/2004

Federal Funds Requested: \$140,000

Non-Federal Matching Funds Requested: \$148,127

Congressional District: 8th

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Abstract

Nutrient accumulation on land surrounding large densities of animal feeding operations has contributed to elevated phosphorus (P) and nitrogen (N) concentrations in surface waters. Evaluations of total maximum daily loads for P and other nutrients have led to regulatory mandates for large reductions in nutrient loading on impaired watersheds. A system for using and exporting manure P through turfgrass is among best management practices under consideration in efforts to reduce nutrient loading on watersheds. Manure contributes to improved soil properties and the relatively large value of sod helps to pay transportation costs for manure P during turfgrass production. Moreover, the slow release of P from manure reduces potential losses of soluble P in runoff and eliminates the need for additional inorganic P fertilizer inputs after sod is transplanted. Despite the advantages of exporting manure P from impaired watersheds through sod, the impacts and benefits on the receiving watershed have yet to be thoroughly evaluated. Cycle II of the National Water Quality Assessment (NAWQA) on the Trinity River basin provides a timely opportunity for complementary studies of the transport and fate of manure and inorganic P imports through and for transplanted sod. Plot- and field-scale observations will be integrated with NAWQA sampling of in-stream physical and chemical properties on urban and agricultural sub-basins and along gradients of urban intensity. N and P losses in surface runoff of replicated plots will be compared between two sources of transplanted sod: 1.) sod produced with manure P and 2.) sod produced with inorganic P. Similarly, N and P losses on replicated plots and production fields will be quantified after manure or inorganic P sources are applied to newly-planted turfgrass sprigs and after sod harvest.